



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,322	05/01/2001	Nobufumi Mori	Q64266	2257

7590 12/08/2004
SUGHRUE, MION, ZINN, MACPEAK & SEAS, PLLC
Suite 800
2100 Pennsylvania Avenue, N.W.
Washington, DC 20037-3213

EXAMINER

PHAM, HAI CHI

ART UNIT PAPER NUMBER

2861

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/845,322

Applicant(s)

MORI ET AL.

Examiner

Hai C Pham

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6, 12-18, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 7-11 and 23 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Terminal Disclaimer

1. The terminal disclaimer filed on 09/22/04 disclaiming the terminal portion of any patent granted on this application, which would extend beyond the expiration date of U.S. Patent No. 6,499,893 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 12, 13, 17-18, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. (U.S. 5,073,791) in view of Kagami et al. (U.S. 5,374,496).

Mouri et al. discloses an image forming apparatus including a photosensitive cartridge (13) for housing the light and heat sensitive recording material (photo-sensitive and heat-developing material 11) to be supplied to the imaging exposure portion (2) located further downstream where the photo-sensitive and heat-developing material is imagewise exposed by the laser exposure means (10), a further downstream heating developing portion (3) where the photo-sensitive and heat-developing material is

Art Unit: 2861

subjected to heating development at 120° C, and the fixing unit (whole-surface exposure portion 4) where the photo-sensitive and heat-developing material is subjected to fixing by exposure from a light source (22).

Mouri et al. does not explicitly specify the wavelength of such light source, meaning that a light source of any appropriate wavelength could be used for the fixing unit. Mouri et al. also fails to teach the light fixing having an intensity so as to provide an illumination of 10,000 to 50,000,000 lux.

Kagami et al. discloses an image forming method for recording an image on a sheet of light and heat-sensitive recording material, the method comprising exposing the light and heat-sensitive recording material to light at an irradiation energy of $1\text{mJ}/\text{cm}^2$, the exposure light source including sunlight, tungsten lamps, LEDs or lasers where the wavelengths can be the same or different (col. 9, line 60 to col. 10, line 10), heat developing the image recording medium under conditions of 120°C and 20 seconds, and thereafter fixing the recording material using a fluorescent lamp (col. 40, lines 15-25).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate a light source emitting a visible light in the fixing unit of Mouri et al. as taught by Kagami et al. since any light source is acceptable in the device of Mouri et al. The motivation for doing so would have been to provide an inexpensive and easy to use light source as a fixing unit.

Mouri et al. further teaches the image exposure unit provided with a light source that includes laser, LEDs, fluorescent lamp, whose wavelength would range anywhere

Art Unit: 2861

from 300 to 1100 nm (claims 2, 13), the recording material having compositions with sensitivity at 300 to 370 nm (claim 12), the heating developing portion developing the recording material with a heating temperature of 120° C (claim 4), and the image recording relates only to processing of a single sheet (claim 21) (the recording material being cut into single sheets by the cutter 16) (see also col. 3, lines 49-52). Mouri et al. further teaches the cartridge or casing section, the optical recording portion (2), the developing portion (3) and the fixing portion (4) being arranged in a vertical configuration (Fig. 1).

4. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Kagami et al., as applied to claims 1 and 12 above, and further in view of Ikenoue et al. (U.S. 4,207,112).

Mouri et al., as modified by Kagami et al., discloses all the basic limitations of the claimed invention except for the illumination intensity and the non-contact type of heat developer.

Ikenoue discloses a light and heat sensitive recording medium to be imagewise exposed by light and then heat-developed by a heater, which can be either a non-contact or contact type heater such as laser lamps or heat drum, wherein a variety of light sources can be used, the illumination intensity would depend on the light sensitive recording material, e.g. a low speed sensitive recording material would require a higher illumination intensity, e.g., 10,000 lux (col. 28, lines 7-45).

Art Unit: 2861

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to regulate the illumination intensity as well as to incorporate a non-contact type heat-developer into the device of Mouri et al. as taught by Ikenoue et al. The motivation for doing so would have been to provide optimum recording conditions to adapt to a selective type of recording material.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Kagami et al., as applied to claim 1 above, and further in view of Yamada et al. (U.S.).

Mouri et al., as modified by Kagami et al., discloses all the basic limitations of the claimed invention except for the range of variation of the heating temperature of the thermal developing section being set at most 5° C.

Regardless, it is known in the printing art that the temperature distribution in a heat-developing device should be kept less than $\pm 1^{\circ}\text{C}$ as a requirement. Yamada et al., for example, discloses a heat-developable image recording material whose temperature distribution variation would be kept within a strict requirement of $\pm 1^{\circ}\text{C}$ during the heat development of the color latent image (see Table 1).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Mouri et al. with the temperature distribution variation limitation as taught by Yamada et al. for the purpose of providing a sharp color image.

Art Unit: 2861

6. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mouri et al. in view of Kagami et al., as applied to claim 12 above, and further in view of Okino (U.S. 4,958,233).

Mouri et al., as modified by Kagami et al., discloses all the basic limitations of the claimed invention except for the type of laser sources.

Okino, an acknowledged prior art, discloses an image recording apparatus comprising a casing section (photosensitive material magazine 14), which encases a light and heat sensitive recording material (light-sensitive and heat-developable material S), an optical recording section (digital exposure unit 200), downstream of the casing section (see Fig. 1), which exposes the light and heat sensitive recording material to visible light (RGB lights), which has been fed from the casing section, for recording a latent image, a thermal developing section (thermal developing unit 40), downstream of the optical recording section, which develops the latent image by heating (using curved heating board 43), and an optical fixing section (image fixing unit 106), downstream of the thermal developing section, which irradiates UV light for fixing the developed image. Okino further teaches the light source being a semiconductor laser, and using different light sources of different wavelengths, all of semiconductor lasers.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Mouri et al. with the aforementioned teachings of Okino. The motivation for doing so would have been to provide a sharp coherent light sources to expose the light and heat sensitive recording material.

Allowable Subject Matter

7. Claims 7-11 and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the primary reason for the indication of the allowability of claims 7-11 is the inclusion therein, in combination as currently claimed, of the limitations related to the composition of the light and heat developing recording material, which includes a color-forming component encapsulated in heat-responsive microcapsules to be reacted with a colorless compound existing outside of the microcapsules to form color, and a photopolymerization initiator, wherein the light and heat developing recording material is imagewise exposed to light to form a latent image, which is heat-developed, and the developed image is fixed with a visible light to form the image. The combined limitations are not found taught by the prior art of record considered alone or in combination.

The primary reason for the indication of the allowability of claim 23 is the inclusion therein, in combination as currently claimed, of the limitation "wherein the thermal developing apparatus comprises a far infrared heat source", which is not found taught by the prior art of record considered alone or in combination.

Response to Arguments

9. Applicant's arguments with respect to claims 1-6, 12-18 and 21-22 have been considered but are moot in view of the new grounds of rejection presented in this Office action.

Applicants argued that "[T]he [Mouri et al.] reference is directed to formation of printing plates, such as application of ink to the plates". Applicants selectively picked a different embodiment disclosed by Mouri et al., as shown in Figure 5A, to demonstrate the structural difference between the main reference and the secondary references and/or between the main reference and the current invention. However, the rejection of the current claims is solely based on either Figs. 1 or 4 of the Mouri et al. reference.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (571) 272-2260. The examiner can normally be reached on M-F 8:30AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L Talbott can be reached on (571) 272-1934. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2861

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HAI PHAM
PRIMARY EXAMINER

December 7, 2004